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09/772,894	01/31/2001	Junichi Akiyama	202594US2RD	1087

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EXAMINER

PSITOS, ARISTOTELIS M

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/772,894

Applicant(s)

AKIYAMA ET AL.

Examiner

Aristotelis M Psitos

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2-8 and 16-22 is/are pending in the application.
- 4a) Of the above claim(s) 16-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-8 and 20-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/17/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/17/04 has been entered.

### ***Information Disclosure Statement***

The IDS of 3/17/04 has been received and made of record. The examiner respectfully requests the date of the second article submitted, ISOM article pp 110-111 (Technical Digest 2000?).

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 2-6,8, 20-22 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,587,494 in view of Tanaka. The below analysis focuses on the '494 patent.

Present claim two differs from claim 1 of the '494 patent due to magnetic pole limitations in the preamble, and these limitations are taught by Tanaka.

Tanaka teaches in this environment the ability of having a heat assisted near field magnetic-optic recording system having a magnetic pole configuration as required by present claim 1.

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It would have been obvious to modify either of the above patents with the addition of teaching from Tanaka because SIL systems/near field optic systems are well known and used in near field MO recording reproducing systems in order to increase recording density by reducing track pitch. The dependency upon a magnetic field is part of the MO phenomenon.

With respect to dependent claims 3-8 the following additional analysis is made.

The limitation with respect to present claim 3, the dielectric film, and claim 8, such is claimed in claim two of the '494 patent.

The limitation of claim 4, the thickness of the dielectric film, is claimed in claim 6 of the '494 patent.

The limitations of claim 5 is found in either claim 3, or claim 11 in the '494 patent.

The limitations of claim 6 is in the '494 patent, i.e., the oscillator operates in a mode to yield a direction of polarization – the TM mode.

The limitations of claim 20 is present in claim 1 of the '494 patent, i.e., the relationships between  $w_1$  and  $w_2$  and the directions with respect to the polarization yields a rectangular shaped aperture.

With respect to independent claim 21, this includes an actuating mechanism in addition to magnetic pole and the preamble language.

This mechanism is also taught in the Tanaka reference, and is necessary in order to access to record medium in a dynamic action, see description with respect the arm in col. 1 lines 13-30 as well as col. 3 lines 45 plus.

It would have been obvious to modify the base system of of the '494 patent with the above accessing mechanism, motivation is to dynamically access the record medium in this MO environment.

With respect to the limitation of claim 22, the examiner interprets the layer 14 in Tanaka as such.

It would have been obvious to modify the base system of the '484 patent with the additional layer as taught by Tanaka, motivation is to provide for overall protection of the record medium structure from abrasive impacts.

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4. Claims 2-4,6,8, 20-22 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of 6,687,277 further in view of Tanaka. The below analysis focuses on the '277 patent.

Present claim two differs from claim two of the '277 patent due to magnetic pole limitations in the preamble, and these limitations are taught by Tanaka.

Tanaka teaches in this environment the ability of having a heat assisted near field magnetic-optic recording system having a magnetic pole configuration as required by present claim 1.

It would have been obvious to modify either of the above patents with the addition of teaching from Tanaka because SIL systems/near field optic systems are well known and used in near field MO recording reproducing systems in order to increase recording density by reducing track pitch. The dependency upon a magnetic field is part of the MO phenomenon.

With respect to dependent claims 3-8 the following additional analysis is made.

The limitation with respect to present claim 3, the dielectric film, and claim 8, such is claimed in claims 4 and 5 of the '277 patent.

The limitations of claim is claimed in claim 10 of the '277 patent.

The limitations of claim 6 is found in claim 1 of '277 patent, i.e., the oscillation of the laser operates in the TM mode.

The limitations of claim 20 is present in claim 1 of the '277 patent, i.e., the relationships between  $w_1$  and  $w_2$  and the directions with respect to the polarization yields a rectangular shaped aperture see claim 8 of this patent as it defines the  $w_1$  value.

With respect to independent claim 21, this includes an actuating mechanism in addition to magnetic pole and the preamble language.

This mechanism is also taught in the Tanaka reference, and is necessary in order to access to record medium in a dynamic action, see description with respect the arm in col. 1 lines 13-30 as well as col. 3 lines 45 plus.

It would have been obvious to modify the base system of of the '277 patent with the above accessing mechanism, motivation is to dynamically access the record medium in this MO environment.

With respect to the limitation of claim 22, the examiner interprets the layer 14 in Tanaka as such.

It would have been obvious to modify the base system of the '484 patent with the additional layer as taught by Tanaka, motivation is to provide for overall protection of the record medium structure from

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abrasive impacts.

5. Claim 7 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 of U.S. Patent No. 6,587,494 in view of Tanaka as stated in paragraph 3 above and further in view of JP 11-265520/Ito et al. The Ito et al document is provided as the English translation of the JP document.

With respect to the additional claim 7 limitation of having an optical light collector, the use of such is taught by the JP/Ito et al document – see the description of having an objective lens in this arrangement with respect to figure 14 a (element 76).

It would have been obvious to modify the base system of either Hatakoshi et al patent and Tanaka as stated above in paragraph 3 with the additional optical element taught by the JP/Ito et al document, motivation is to assist in the narrowing of the light spot by use of appropriate objective lens elements, focusing such upon the record medium.

6. Claim 7 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 6,687,277 in view of Tanaka as stated in paragraph 4 above and further in view of JP 11-265520/Ito et al. The Ito et al document is provided as the English translation of the JP document.

With respect to the additional claim 7 limitation of having an optical light collector, the use of such is taught by the JP/Ito et al document – see the description of having an objective lens in this arrangement with respect to figure 14 a (element 76).

It would have been obvious to modify the base system of either Hatakoshi et al patent and Tanaka as stated above in paragraph 4 with the additional optical element taught by the JP/Ito et al document, motivation is to assist in the narrowing of the light spot by use of appropriate objective lens elements.

7. Claim 5 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 6,687,277 in view of Tanaka as stated in paragraph 4 above and all further in view of the Kann et al article.

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Claim 5 describes the absorption loss through the aperture. The examiner interprets this claim to mean that such a loss is peculiar to the type of operational mode, i.e., the TM mode as depicted in figures 8-12 of this application. If this is incorrect, then applicants' cooperation is respectfully requested in interpreting this claim.

The Kann et al article, note section 4 in particular, discusses the differences between absorption in the TE vs. the TM mode of operation in this environment. See also the discussion of figure 5. The examiner concludes that the differences between the modes of operation (as noted in figure 5) meet the claimed limitation of "10 times as much" absorption loss.

It would have been obvious to modify the US patent 6,687,277 in view of Tanaka as stated above in paragraph 4, with the above teaching from the Kann et al article, motivation is to use the difference in heat loss in the TM vs. TE mode of operation to increase the heating ability in the record medium in order to provide for proper near-field recording parameters – i.e., the use of heat/thermal in the near-field heat assisted magnetic recording.

#### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 2,7, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Tanaka considered with JP 11-265520/Ito et al, or as discussed below in paragraphs.

With respect to the independent claims 2 and 21, the following analysis is made.

Tanaka discloses a near field thermally assisted magnetic recording system. Tanaka further discloses an aperture less than the wavelength of the laser beam - see either the abstract or col. 8, lines 3 through 10. There is no particular orientation as recited by the claimed limitations. See also the discussion at col. 6 lines 1-26, which give various wavelengths and spot diameters.

The Japanese reference, alternatively the Ito document that is the U.S. equivalent thereof, as noted in column 6 with respect to figure 4b further teaches such.

It would have been obvious to modify the base system of Tanaka with the above teaching from the JP document for the reasons discussed therein and as indicated in the submitted OA from the JP

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office/part of the IDS submitted on 10/2/03 as stated therein with respect to paragraphs 24-26 and figure 4b in the JP document.

Ito et al teach in this environment the use of optical collecting elements for their inherent use of focusing light – see the discussion with respect to element 76 in figure 14a.

It would have been obvious to modify the base system of Tanaka with the above light-collecting element taught by the JP/Ito et al document, motivation is to permit proper focusing of the light spot upon the record medium.

The limitations of claim 20, along with the actuating mechanism and the recording material limitations of claim 22 are met by Tanaka, see the discussing with the driving mechanism in the third aspect/embodiment at col. 3, lines 45-50.

9. Claims 3,4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the art as applied to claims 2,7, 20-22 as stated in paragraph 8 above, and further in view of Kobayashi et al.

Kobayashi et al teaches the appropriate dielectric arrangement in his laser aperture system (element 6).

With respect to the range value of claim 4, such is met by the thickness of the insulating material (6) in the Kobayashi et al reference, i.e., 1600 angstroms is within the range specified.

It would have been obvious to modify the base system of the references relied upon above with the additional teaching from Kobayashi et al for the reasons noted in col. 2 lines 35-49.

10. Claims 5 & 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the art as applied to claims 2,7, 20-22 as stated in paragraph 8 above, and further in view of the ISOM Technical digest article.

With respect to the limitations of claims 5 and 6 the examiner relies upon the discussion of the ISOM article with respect to the loss versus mode of operation – section 2 of the article as it applies to the width requirements of claim 5 and the mode of operation (TM) of claim 6.

It would have been obvious to modify the base system of Tanaka considered with JP 11-265520/Ito et al with the above teaching from the ISOM article, motivation is to provide for a better



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through put of the optical power for narrow slits in this environment (high density recording) and insure proper signal recording.

11. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the art as applied to claims 2,7, 20-22 as stated in paragraph 8 above, and further in view of Mononobe et al-WO98/10296. The examiner is providing a copy of US 6,236,783 as the English translation of the WO document, and no copy of the WO document to applicants.

Tanaka and JP 11-265520/Ito et al are relied upon as stated in paragraph 8 above with respect to the base claim 2.

With respect to the limitation of claim 6 (TM) mode of laser oscillation and the aperture of is filled with a dielectric material such is taught by the WO document – see col. 18, lines 10-16.

It would have been obvious to modify the base system of Tanaka, JP 11-265520/Ito et al with the above teaching of the Mononobe et al document, motivation is as discussed in Mononobe et al to reduce loss in the TM mode. The examiner concludes that the TM mode of operation of the oscillator is what the TM mode in this passage is referring.

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable the art as applied to claims 2,7,20-22 as stated in paragraph 5 above further considered with the Kann et al article.

Claim 5 describes the absorption loss through the aperture. The examiner interprets this claim to mean that such a loss is peculiar to the type of operational mode, i.e., the TM mode as depicted in figures 8-12 of this application. If this is incorrect, then applicants' cooperation is respectfully requested in interpreting this claim.

The Kann et al article, note section 4 in particular, discusses the differences between absorption in the TE vs. the TM mode of operation in this environment. See also the discussion of figure 5. The examiner concludes that the differences between the modes of operation (as noted in figure 5) meet the claimed limitation of "10 times as much" absorption loss.

It would have been obvious to modify the base system of Tanaka considered with JP 11-265520/Ito et al with the above teaching from the Kann et al article, motivation is to use the difference is heat loss in the TM vs. TE mode of operation to increase the heating ability in the record medium in order

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to provide for proper near-field recording parameters – i.e., the use of heat/thermal in the near-field heat assisted magnetic recording.

***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection and or as further elaborated upon above.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Oumi et al – near field system – see fig. 3 as well as the discussion with respect to the aperture.

Tominaga et al – variable aperture near-field optics.

**Hard copies of the application files are now separated from this examining corps; hence the examiner can answer no questions that require a review of the file without sufficient lead-time.**

**Any inquiries concerning missing papers/references, etc. must be directed to Group 2600 Customer Services at (703) 306-0377.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aristotelis M Psitos whose telephone number is (703) 308-1598. The examiner can normally be reached on M-Thursday 8 - 4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William R. Korzuch can be reached on (703) 305-6137. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMP

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